

REMARKS

Claims 1-22 are pending in the present application. Claims 19-22 are withdrawn. Claims 19-22 were rejected in the Office Action dated August 15, 2005. Reconsideration of all rejected claims is requested in light of the arguments presented below.

Claim Rejections under 35 U.S.C. §103(a)

Claims 1-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Rabkin et al., U.S. Patent No. 6,559,008 in view of Patelmo et al., U.S. Patent No. 6,281,077. The Office Action acknowledged "Rabkin does not disclose shaping the plurality of floating gate structures to reduce the width in a second direction of an upper part of individual ones of the plurality of floating gate structures." Office Action, page 3, second paragraph. Patelmo was cited as showing this feature. However, Patelmo does not appear to show this feature and no adequate motivation is provided for combining the teachings of Patelmo and Rabkin.

Floating gate 27b of Patelmo does not appear to undergo reduction in width in the manner claimed. Floating gate 27b appears to retain the same width throughout the process steps of Figures 10-18. There appears to be no indication in the text that the width of floating gate 27b in any direction is reduced. It is not clear which direction in Patelmo would be considered the second direction or which part is considered an upper part. Thus, the rejection is not well understood. It is requested that any future rejection identify the first and second direction and indicate the step in Patelmo that reduces the width of a floating gate structure. Because this claim limitation has not been shown in the cited references, claim 1 is submitted to be allowable.

The motivation to combine the teachings of Patelmo and Rabkin is not well understood. The Office Action indicated that such a combination would provide a method for manufacturing nonvolatile cells and high-speed transistors with a small number of masks, which is simple, and has the lowest possible costs, citing column 1, lines 50-54 of Patelmo. However, it is not clear how the system of Patelmo would be combined with the system of Rabkin. In particular, it is not clear which steps of Patelmo would be added to the process of Rabkin. If such steps were added, it would appear to make the process of Rabkin more complex and be contrary to the cited motivation (a small number of masks, which is simple). It is not seen how the process of Patelmo would reduce the number of steps of Rabkin. Therefore, it is requested that any future rejection based on the combination of these references indicate how the process of Rabkin would

be simplified by modifying the process according to the teachings of Patelmo. In particular, it is requested that the mask steps of Rabkin that would be eliminated should be identified in the rejection. Because no adequate motivation to combine these references is provided, claim 1 is submitted to be allowable.

Claims 2-10 depend from claim 1 and are therefore submitted to be allowable at least as depending from an allowable base claim. In addition, claims 2-10 recite additional limitations that have not been addressed in the Office Action. Because the additional limitations have not been addressed, no *prima facie* case of obviousness has been made with respect to claims 2-10. Certain additional limitations of claims 2-10 provide additional grounds for allowing claims 2-10 over the cited prior art. Examples of such limitations follow.

Claim 2 recites, "forming a first plurality of masking portions extending in a first direction by the same step used to form the plurality of floating gates, the first plurality of masking portions extending over shallow trench isolation structures and over floating gate structures." The Office Action did not indicate any corresponding elements in the cited references and no such masking portions have been found in the cited references.

Claim 3 recites, "forming a second plurality of masking portions having sidewalls in contact with ones of the first plurality of masking portions and subsequently removing the first plurality of masking portions." The Office Action did not indicate any corresponding elements in the cited references and no such masking portions have been found in the cited references.

Claim 4 recites, "forming a plurality of sidewall spacers that are in contact with the sidewalls of the second plurality of masking portions and that extend over portions of the floating gate structures." The Office Action did not indicate any corresponding elements in the cited references and no such sidewall spacers have been found in the cited references.

Claim 5 recites, "forming a third plurality of masking elements, an individual one of the third plurality of masking elements extending between ones of the plurality of sidewall spacers on a floating gate structure and subsequently removing the plurality of sidewall spacers." The Office Action did not indicate any corresponding elements in the cited references and no such masking elements have been found in the cited references.

Claim 6 recites, "etching the floating gate structures with the plurality of masking elements in place." The Office Action did not indicate any corresponding step in the cited references and no such etching has been found in the cited references.

Claim 10 recites, “a control gate extends to enclose the upper part of a floating gate structure on three or four sides and from above.” The Office Action did not indicate any corresponding element in the cited references and no such control gate and floating gate have been found in the cited references.

Claim Rejections under 35 U.S.C. §102

Claims 11-18 are rejected under 35 U.S.C. §102(e) as being anticipated by Rabkin et al., U.S. Patent No. 6,559,008. Claim 11 recites, “forming a plurality of masking elements, an individual masking element covering a portion of one of the plurality of floating gate structures; and then etching the plurality of floating gate structures to remove portions of the floating gate structures that are not covered by masking elements.” The Office Action did not address these limitations. Because these limitations have not been identified in Rabkin, anticipation has not been shown. Rabkin does not appear to show forming masking elements and etching floating gates. It appears that floating gate layer 42 of Rabkin is not etched subsequent to being formed into floating gate structures. Instead, floating gate layer 42 appears to be covered by selective poly deposition layer 48 and polysilicon layer 52 prior to forming separate floating gate structures (see column 4, line 53 to column 5, line 7). Thus, it is not clear how masking and etching of floating gate structures would be achieved after formation of separate floating gate structures.

Claims 12-14 depend from claim 11 and are submitted to be allowable at least for depending from an allowable base claim. In addition, claims 12-14 recite claim elements that further distinguish over Rabkin and are therefore submitted to be additionally allowable.

Claim 12 recites, “etching back the plurality of structures having sidewalls prior to forming a plurality of masking elements.” No such etching back was identified in the Office Action and no such etching back appears to be shown by Rabkin.

Claim 13 recites, “the individual masking element extends over part of an upper surface and part of two side surfaces of the one of the plurality of floating gate structures.” No such masking element was identified in the Office Action and no such masking element appears to be shown by Rabkin.

Claim 14 recites, "the removed portions extending from the upper surface to a level that is between the upper surface and the lower surface" No such removed portions were identified in the Office Action and no such removed portions appear to be shown by Rabkin.

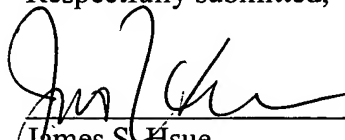
Claim 15 is amended to clarify claim language and to include limitations previously recited in claim 16 (now canceled). Claim 15 as amended recites, "a portion of the individual conductive strip extends into the at least a portion of a recess of a floating gate." The Office Action did not address this claim feature. No corresponding feature appears to be shown by Rabkin. In particular, while Figure 4 of Rabkin shows polysilicon layer 61 having a non-uniform surface, it does not appear that any portion of polysilicon layer 63 extends into a portion of a recess in polysilicon layer 61. Because this feature has not been shown, claim 15 is submitted to be allowable.

Claim 17 depends from claim 15 and is submitted to be allowable at least for depending from an allowable base claim. In addition, claim 17 recites, "the at least a portion of a protrusion has a surface that extends along a first plane that is perpendicular to the substrate surface, the individual conductive strip has a surface that extends along a plane that is parallel to the first plane and is separated from the first plane by the dielectric layer." Polysilicon layer 61 of Rabkin (Figure 4) does not appear to have a portion of a protrusion having a surface that extends along a plane. The surface of polysilicon layer 61 is "non-uniform, non-flat" (column 6, line 41) and thus does not appear to have planar surfaces. Therefore, claim 17 is submitted to be additionally allowable over Rabkin.

CONCLUSION

In view of the amendments and remarks contained herein, it is believed that all claims are in condition for allowance and an indication of their allowance is requested. However, if the Examiner is aware of any additional matters that should be discussed, a call to the undersigned attorney at: (415) 318-1160 would be appreciated.

Respectfully submitted,


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Date